Claims

1.

A child-resistant package that includes:

a container having a container wall surrounding an open mouth, a plurality of external projections extending radially outwardly from said container wall at positions spaced from said mouth, notches on undersides of said projections, and an external surface on said container wall that slopes radially inwardly and axially upwardly between said projections and said mouth, and

a closure having an annular base wall with a peripheral skirt, a plurality of internal lugs on said skirt, and an internal peripheral edge on said base wall,

said internal peripheral edge of said base wall being engagable with said sloping external wall surface of said container wall for sealing said package and for resiliently urging said lugs into said notches.

2.

The package set forth in claim 1 wherein said container wall is radially resiliently flexible around said mouth, being adapted to flex radially inwardly upon engagement with said inner peripheral edge of said base wall for resiliently urging said lugs into said notches and sealing said closure to said container.

3.

The package set forth in claim 2 wherein said container wall tapers in radial thickness surrounding said mouth.

4.

The package set forth in claim 2 wherein said container includes an internal channel in said container wall adjacent to an end of said container wall to facilitate inward flexure of said wall around said mouth.

5.

The package set forth in claim 1 wherein said container wall is radially inflexible around said mouth, and wherein said closure is adapted to flex radially outwardly around said base wall for axially urging said lugs into said notches.

6.

The package set forth in claim 5 wherein said container wall includes an external bead surrounding said mouth and stiffening said wall against radial flexure around said mouth, said external surface being a conical surface on said bead.

7.

The package set forth in claim 1 wherein said base wall is flat and planar.

8.

The package set forth in claim 1 wherein said container has an external ledge that extends radially outwardly from said wall and on which said projections are disposed.

9.

A package having child-resistant and non-child-resistant modes of operation, which includes:

a container having an end with an open mouth surrounded by a container wall with a central axis and an outer surface surrounding said mouth, and at least one first lock element extending radially outwardly from said wall, and

a closure that includes an annular base wall having inner and outer peripheral edges, a cylindrical skirt extending from said outer peripheral edge of said base wall, at least one second lock element on said skirt, and a projection extending axially from said inner peripheral edge of said base wall in a direction opposite from said skirt, said projection having an annular sidewall spaced radially inwardly from said outer peripheral edge of said skirt,

said closure being adapted to be secured to said container in a child-resistant mode of operation with said at least one second lock element on said skirt releasably engaged with said at least one first lock element on said container wall, and with said inner peripheral edge of said base wall in engagement with said outer surface of said container wall to bias said lock elements in engagement with each other and to seal said package,

said closure being adapted to be secured to said container in a non-child-resistant mode of operation with said annular sidewall of said projection received in plug-sealing engagement within said container mouth.

10.

The package set forth in claim 9 wherein said base wall is flat lying in a plane between said inner and outer peripheral edges, and wherein said inner and outer peripheral edges are circular and concentric.

11.

The package set forth in claim 9 wherein said container wall is radially resiliently flexible around said mouth, flexing radially inwardly from engagement with said inner peripheral edge of said base wall in said child-resistant mode of operation and radially outwardly from engagement with said annular wall in said non-child-resistant mode of operation.

12.

The package set forth in claim 11 wherein said container wall tapers in radial thickness surrounding said mouth.

13.

The package set forth in claim 11 wherein said container includes an internal channel in said container wall adjacent to an end of said container wall to facilitate inward flexure of said wall around said mouth.

14.

The package set forth in claim 11 wherein said projection on said closure includes a conical sidewall that extends between said annular sidewall and said inner peripheral edge of said base wall, said conical sidewall having an inner surface that engages said outer surface of said container wall in said child-resistant mode of operation.

15.

The package set forth in claim 9 wherein said container wall is radially inflexible around said mouth, and wherein said closure is adapted to flex radially outwardly around said base wall for radially urging said lugs into said notches.

16.

The package set forth in claim 15 wherein said wall of said container wall includes a radially outwardly extending external bead surrounding said mouth and stiffening said container wall against radial flexure around said mouth, said bead having a conical outer surface for engagement by said inner peripheral edge of said base wall in said child-resistant mode of operation to flex said base wall radially outwardly.

17.

The package set forth in claim 16 wherein said closure includes a flexible resilient wall spaced radially outwardly from said annular wall of said projection for resiliently embracing said bead on said container wall in said non-child-resistant mode of operation.

18.

The package set forth in claim 9 wherein said container has a circumferential bead extending radially inwardly from an inside surface of said container wall adjacent to said mouth, and wherein said closure has a radially outwardly extending circumferential bead on said projection annular wall for snap-fit over said bead on said container wall in said non-child-resistant mode of operation.

19.

The package set forth in claim 18 wherein said bead on said container is circumferentially discontinuous.

20.

The package set forth in claim 9 wherein said closure includes a wall extending from said outer peripheral edge of said base wall in a direction opposite from said skirt for engaging said at least one first lock element on said container in said non-child-resistant mode of operation.

21.

The package set forth in claim 20 wherein said at least one first lock element includes a plurality of projections on said container wall, said projections having shoulders in a common plane, and wherein said wall extending from said outer peripheral edge has an internal bead for engagement over said shoulders in said non-child-resistant mode of operation.

22.

The package set forth in claim 9 wherein said closure includes a wall extending from said outer peripheral edge of said base wall for covering said at least one first lock element on said container when said projection is received within the container mouth.

23.

A closure for receipt on a container in child-resistant and non-child-resistant modes of operation, which includes:

an annular base wall having concentric circular inner and outer peripheral edges, a cylindrical skirt extending from said outer peripheral edge of said base wall, at least one lock element on said skirt, and a projection extending axially from said inner peripheral edge of said base wall coaxially with said skirt and in a direction opposite from said skirt, said inner peripheral edge of said base wall having a radially inwardly facing surface for radial external engagement with an opposing external surface on a container.

24.

The closure set forth in claim 23 wherein said radially inwardly facing surface is conical, narrowing toward said projection.

25.

A closure for receipt on a container, which includes:

an annular base wall having concentric circular inner and outer peripheral edges, a cylindrical skirt extending from said outer peripheral edge of said base wall, and at least one internal lock element on said skirt, said inner peripheral edge of said base wall having an angulated surface for engaging and flexing an open end of a container.

26.

A container for a child-resistant package, which includes:

a wall surrounding an open mouth, a plurality of external projections extending radially outwardly from said wall at positions spaced from said mouth and notches on undersides of said projections, said wall having a portion that narrows in radial thickness between said projections and said mouth and having a radially outwardly facing conical wall surface, said portion of said wall being adapted resiliently to flex radially inwardly upon engagement of a closure to bias lugs on the closure into locking engagement with said notches.

27.

The container set forth in claim 26 having a circumferential bead extending radially inwardly from an inside surface of said wall adjacent to said mouth.

28.

The container set forth in claim 27 wherein said bead lies in a plane spaced from said mouth.

29.

The container set forth in claim 28 wherein said bead is circumferentially segmented.

30.

The container set forth in claim 26 wherein said container includes an internal channel in said container wall adjacent to an end of said container wall to facilitate inward flexure of said wall around said mouth.

31.

The container set forth in claim 26 wherein said container has an external ledge that extends radially outwardly from said wall and on which said projections are disposed.

32.

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A method of making a package having child-resistant and non-child-resistant modes of operation, which includes the steps of:

(a) providing a container having an end with an open mouth surrounded by a container wall with a central axis and an outer surface surrounding said mouth, and at least one first lock element extending radially outwardly from said wall, and

(b) providing a closure that includes an annular base wall having inner and outer peripheral edges, a cylindrical skirt extending from said outer peripheral edge of said base wall, at least one second lock element on said skirt, and a dome extending axially from said inner peripheral edge of said base wall in a direction opposite from said skirt, said dome having an annular sidewall spaced radially inwardly from said outer peripheral edge of said skirt,

said closure being adapted to be secured to said container in a child-resistant mode of operation with said at least one second lock element on said skirt releasably engaged with said at least one first lock element on said container wall, and with said inner peripheral edge of said base wall in resilient engagement with said outer surface of said container wall to bias said lock elements in engagement with each other and to seal said package,

said closure being adapted to be secured to said container in a non-child-resistant mode of operation with said annular sidewall of said dome received in plug-sealing engagement within said container mouth.